

TANAKA et al
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Twice Amended) A pair of substrates sandwiching liquid crystals therebetween;
 - a plurality of scanning lines to which scanning signals are successively applied;
 - a plurality of signal lines to which data signals are successively applied, said signal lines intersecting said scanning lines at right angles;
 - a switching element which is arranged in a vicinity of each of intersections of said scanning lines and said signal lines, and electrically connected to both of said scanning and signal lines;
 - a pixel electrode connected to each of said switching elements;
 - said scanning lines, signal lines, switching elements and pixel electrodes being formed on one of said substrates,
 - a common electrode formed on the other of said substrates so that said common electrode faces said pixel electrode with said liquid crystals therebetween;
 - a common line for supplying a common signal to said common electrode;
 - a pixel capacitance, one of electrodes of said pixel capacitance formed by said pixel electrode being connected to said common line; and
 - a dummy scanning line formed outside of one of said scanning lines located at an outermost position on either a scanning start side or a scanning end side of scanning signal, for producing a parasitic capacitance between said dummy scanning line and the pixel electrode connected to the scanning line located at the outermost position.

2. The liquid crystal display device according to claim 1,
wherein said dummy scanning line is arranged at a pitch equal to a pitch of other
adjacent scanning lines so that said pixel electrode is located between said dummy
scanning line and the scanning line located at the outermost position.

3. The liquid crystal display device according to claim 1,
wherein an inter-layer insulating film is formed over said switching elements,
scanning lines and signal lines, and

each of said pixel electrodes overlaps said dummy scanning line and adjacent
scanning line corresponding to said pixel electrode with said inter-layer insulating film
therebetween.

4. The liquid crystal display device according to claim 1, further comprising signal
input means for inputting a signal to said dummy scanning line.

5. The liquid crystal display device according to claim 4,
wherein said signal input means inputs a signal to said dummy scanning line
before an output of a scanning signal to be input to the scanning line located at the
outermost position on the scanning start side of scanning signal.

6. The liquid crystal display device according to claim 4,
wherein said signal input means inputs a signal to said dummy scanning line after
an output of a scanning signal to be input to the scanning line located at the outermost
position on the scanning end side of scanning signal.

7. The liquid crystal display device according to claim 4,
wherein said signal input means inputs a scanning signal generated exclusively for
said dummy scanning line to said dummy scanning line.

8. The liquid crystal display device according to claim 4,
wherein said signal input means inputs to said dummy scanning line a scanning
signal to be input to the scanning line located at the outermost position on either the
scanning start side or the scanning end side of scanning signal.

9. The liquid crystal display device according to claim 4,
wherein said signal input means inputs to said dummy scanning line the common
signal to be input to said common electrode.

10. The liquid crystal display device according to claim 4,
wherein said signal input means inputs to said dummy scanning line a scanning
signal of a level which does not turn on said switching elements formed on said substrate.

11. A method of driving a liquid crystal display device including a plurality of
scanning line to which scanning signals are successively applied, a plurality of signal
lines to which data signals are successively applied, a switching element which is
arranged in a vicinity of each of intersections of the scanning lines and the signal lines
and connected to both of the scanning and signal lines, a pixel electrode connected to
each of the switching element, a pixel capacitance formed by the pixel electrode, a
common electrode which is arranged to face the pixel electrode, liquid crystals placed
between the pixel electrode and the common electrode, and a dummy scanning line
formed outside of one of the scanning lines located at an outermost position on either a
scanning start side or a scanning end side of scanning signal to produce a parasitic
capacitance between the dummy scanning line and the pixel electrode connected to the
scanning line located at the outermost position, said method comprising the steps of:

supplying the scanning signal and the data signal to the switching element and
supplying a common signal to one of electrodes of the pixel capacitance so as to change

an electric potential between the pixel electrode and the common electrode and vary a transmittance of the liquid crystals; and
inputting a signal to the dummy scanning line.

12. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is output before an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning start side of scanning signal.

13. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is output after an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning end side of scanning signal.

14. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is a scanning signal generated exclusively for the dummy scanning line.

15. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is a scanning signal to be input to the scanning line located at the outermost position on either the scanning start side or the scanning end side of scanning signal.

16. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is the common signal to be applied to the common electrode.

17. The method of driving the liquid crystal display device according to claim 11, wherein the signal to be input to the dummy scanning line is a scanning signal of a level which does not turn on the switching elements.

18. A pair of substrates sandwiching liquid crystals therebetween;
a plurality of scanning lines to which scanning signals are successively applied;
a plurality of signal lines to which data signals are successively applied, said
signal lines intersecting said scanning lines at right angles;
a switching element which is arranged in a vicinity of each of intersections of said
scanning lines and said signal lines, and electrically connected to both of said scanning
and signal lines;
a pixel electrode connected to each of said switching elements;
said scanning lines, signal lines, switching elements and pixel electrodes being
formed on one of said substrates,
a common electrode formed on the other of said substrates so that said common
electrode faces said pixel electrode with said liquid crystals therebetween;
a common line to which a common signal is applied;
a pixel capacitance, one of electrodes of said pixel capacitance being connected to
said common line; and
a dummy scanning line formed outside of one of said scanning lines located at an
outermost position on either a scanning start side or a scanning end side of scanning
signal, for producing a parasitic capacitance between said dummy scanning line and the
pixel electrode connected to the scanning line located at the outermost position.

19. The liquid crystal display device according to claim 18,
wherein said dummy scanning line is arranged at a pitch equal to a pitch of other
adjacent scanning lines so that said pixel electrode is located between said dummy
scanning line and the scanning line located at the outermost position.

20. The liquid crystal display device according to claim 18,
wherein an inter-layer insulating film is formed over said switching elements,
scanning lines and signal lines, and
each of said pixel electrodes overlaps said dummy scanning line and adjacent
scanning line corresponding to said pixel electrode with said inter-layer insulating film
therebetween.

21. The liquid crystal display device according to claim 18, further comprising
signal input means for inputting a signal to said dummy scanning line.

22. The liquid crystal display device according to claim 21,
wherein said signal input means inputs a signal to said dummy scanning line
before an output of a scanning signal to be input to the scanning line located at the
outermost position on the scanning start side of scanning signal.

23. The liquid crystal display device according to claim 21,
wherein said signal input means inputs a signal to said dummy scanning line after
an output of a scanning signal to be input to the scanning line located at the outermost
position on the scanning end side of scanning signal.

24. The liquid crystal display device according to claim 21,
wherein said signal input means inputs a scanning signal generated exclusively for
said dummy scanning line to said dummy scanning line.

25. The liquid crystal display device according to claim 21,
wherein said signal input means inputs to said dummy scanning line a scanning
signal to be input to the scanning line located at the outermost position on either the
scanning start side or the scanning end side of scanning signal.

26. The liquid crystal display device according to claim 21,
wherein said signal input means inputs to said dummy scanning line the common
signal to be input to said common electrode.

27. The liquid crystal display device according to claim 21,
wherein said signal input means inputs to said dummy scanning line a scanning
signal of a level which does not turn on said switching elements formed on said substrate.